

Claims:

1. Semi-finished product for making plug-in contacts in plug-in connectors for electric DC power systems in motor vehicles which are operated at a nominal voltage at which electric arcing may occur, having an electrically conductive main body made of a non-precious metallic material that carries, at least in part, a contact-making coating of a material more precious than the material of the main body, **characterized in that** the coating has a thickness of at least 0.3 μm and consists of silver or of a silver-based alloy with an addition that will not form an alloy with silver or with the silver-based alloy, or will at best form a precipitation alloy, and which has a higher melting point than silver.
2. The semi-finished product as defined in Claim 1, **characterized in that** the coating has a thickness of maximally 10 μm .
3. The semi-finished product as defined in Claim 1, **characterized in that** the coating has a thickness of maximally 5 μm .
4. The semi-finished product as defined in Claim 1, **characterized in that** the coating has a thickness of 0.5 μm to 4 μm .
5. The semi-finished product as defined in any of the preceding claims, **characterized in that** the addition is contained in the silver or in the silver-based alloy in an amount of at least 0.2 percent by weight.
6. The semi-finished product as defined in any of the preceding claims, **characterized in that** the addition is contained in the silver or in the silver-based alloy in an amount of at least 0.5 percent by weight.
7. The semi-finished product as defined in any of the preceding claims, **characterized in that** the addition is contained in the silver or in the silver-based alloy in an amount of maximally 50 percent by weight.

8. The semi-finished product as defined in any of the preceding claims, **characterized in that** the addition is contained in the silver or in the silver-based alloy in an amount of maximally 30 percent by weight.

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9. The semi-finished product as defined in any of the preceding claims, **characterized in that** the addition is contained in the silver or in the silver-based alloy in an amount of maximally 15 percent by weight.

- 10 10. The semi-finished product as defined in any of the preceding claims, **characterized in that** the addition comprises one or more substances taken from the group of the following substances: Tungsten, molybdenum, graphite, nickel, cobalt and metal oxides, especially tin oxide and zinc oxide, as well as tungsten carbide and molybdenum carbide.

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11. The semi-finished product as defined in any of the preceding claims, **characterized in that** the coating is deposited by a PVD process, especially by sputtering.

- 20 12. The semi-finished product as defined in any of the preceding claims, **characterized in that** a material from the following group is selected as material for the main body:

(a) CuNiSi(X): Materials designated C7025, C7026 according to CDA, for example;

25 (b) CuFeP: Materials designated C194, C19210 according to CDA, for example;

(c) CuSn: Materials designated C521, C511, C14415, according to CDA, for example;

30 (d) CuZn: Materials designated C272, C230, C260 according to CDA, for example;

(e) CuCrSiTi(X): Materials designated C18070, C18080, C18090 according to CDA, for example;

- (f) CuNiSn: Materials designated C72500, C19025 according to CDA, for example;
- (g) CuSnZn: Materials designated C663, C425 according to CDA, for example;
- 5 (h) CuNiZn: Materials designated C75700, C77000, C76400 according to CDA, for example;
- (i) CuBe: Materials designated C17100, C17410, C17200 according to CDA, for example;
- 10 (j) CuTi: Materials from the family of materials designated C19900 according to CDA, for example,
- (k) Stainless steel: Materials designated
- 1.4310 according to DIN 17224,
- 1.4311 according to DIN 17440,
- 1.4406 according to DIN 17440,
- 15 1.4428 according to DIN 17443,
- 1.4429 according to DIN 17440,
- 1.4568 according to DIN 17224,
- 1.4841 according to DIN 17224,
- 1.4318, 1.1231, 1.1248, 1.1269, 1.1274, 1.5029 according to DIN V
- 20 17006-100.
13. The semi-finished product as defined in any of the preceding claims, **characterized in that** the product is a strip.
- 25 14. The semi-finished product as defined in Claim 13, **characterized in that** the strip is pre-punched.
15. The semi-finished product as defined in any of the preceding claims, **characterized in that** the coating consists of silver with a tungsten or
- 30 molybdenum content of 4 to 6 % by volume, and is applied in a thickness of 0.5 μm to 5 μm .

16. The semi-finished product as defined in any of the preceding claims, **characterized in that** a diffusion-inhibiting intermediate layer is provided between the main body and the contact-making coating.
- 5 17. The semi-finished product as defined in Claim 16, **characterized in that** the intermediate layer consists of silver or nickel.
18. The semi-finished product as defined in any of the preceding claims, **characterized in that** the concentration of the addition in the silver or silver-
10 alloy coating is lower at the surface of the coating than in the deeper region of the coating.
19. Plug-in contacts for electric plug-in connectors made from a semi-finished product according to any of the preceding claims.
- 15 20. The use of plug-in contacts as defined in Claim 19 in electric power systems of automobiles, which are operated at a nominal voltage at which arcing may occur, especially in 42 Volt DC power systems.
- 20 21. Method for making a semi-finished product as defined in any of Claims 1 to 18 by PVD coating of a strip, consisting of a non-precious metallic material, with silver or a silver-based alloy with an addition, which has a higher melting point than silver and which does not form an alloy, or at best a separation alloy, with the silver or the silver-based alloy.
- 25 22. The method as defined in Claim 21, **characterized in that** coating is effected by sputtering.
- 30 23. The method as defined in Claim 21, **characterized in that** the components of the coating are deposited simultaneous or in a fashion overlapping in time.

- 24. The method as defined in Claim 23, **characterized in that the** ratio of the separation rates of the components of the coating is altered during the separation process.
- 5 25. The method as defined in Claim 24, **characterized in that** the ratio between the separation rate of the addition and the separation rate of the silver or the silver alloy is reduced toward the end of the separation process.